

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

4/12/2006

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte WILLIAM L. BOWDEN, NIKOLAI N. ISSAEV
and MICHAEL POZIN

Appeal No. 2006-2101
Application No. 10/085,303

ON BRIEF

Before KIMLIN, WARREN, and WALTZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-7.

Claim 1 is illustrative:

1. A lithium electrochemical cell, comprising:

an electrolyte comprising:

a mixture of solvents comprising:

propylene carbonate;

dimethoxyethane; and

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a salt mixture comprising:

lithium trifluoromethanesulfonate; and

lithium trifluoromethanesulfonimide,

wherein the cell contains from about 100 to 1500 ppm by weight of sodium.

The examiner relies upon the following references as evidence of obviousness:

Flandrois et al. (Flandrois)	5,554,462	Sep. 10, 1996
Harrison et al.	US 2001/0028871 A1	Oct. 11, 2001
	(Patent Application Publication)	
Sloop	US 2003/0186110 A1	Oct. 2, 2003
	(Patent Application Publication)	
Boryta et al. (Boryta)	US 2004/0005267 A1	Jan. 8, 2004
	(Patent Application Publication)	

Appellants' claimed invention is directed to a lithium electrochemical cell that contains from about 100 to 1500 ppm by weight of sodium. According to appellants, they "believe that they are the first to recognize that reducing the overall quantity of sodium in the lithium cell enhances the ability of the cell to retain a good capacity during storage for extended periods of time" (page 7 of principal brief, first paragraph).

Appealed claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sloop in view of either Harrison or Boryta. Claims 1-6 stand rejected under 35 U.S.C.

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§ 103(a) as being unpatentable over Flandrois in view of either Harrison or Boryta.

Appellants have not set forth an argument that is reasonably specific to any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 1, and we will limit our consideration to the examiner's rejections of claim 1.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we find ourselves in complete agreement with the examiner's reasoned analysis and application of the prior art, as well as his cogent disposition of the arguments raised by appellants. Accordingly, we will adopt the examiner's reasoning as our own in sustaining the rejections of record, and we add the following for emphasis only.

There is no dispute that Sloop and Flandrois are silent with respect to the amount of sodium present in their lithium electrochemical cells. However, both Harrison and Boryta^P evidence that it was known in the art to utilize high purity lithium in making lithium batteries by eliminating sodium as one of the impurities. As set forth by the examiner, Harrison teaches that high purity lithium components effectively prevent undesirable reactions with sodium in applications such as

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batteries. Also, Boryta teaches producing battery grade lithium containing less than 100 ppm sodium as an impurity (see paragraph 0022). Accordingly, based on the teachings of Harrison and Boryta, we fully concur with the examiner that it would have been obvious for one of ordinary skill in the art to prepare a lithium electrochemical cell containing no sodium impurity or at the low levels of concentrations claimed.

Appellants' principal contention is that neither Harrison nor Boryta teaches low sodium concentrations throughout the lithium cell, i.e., the references do "not suggest paying special attention to the overall sodium content of a lithium cell, which includes not only the electrode including lithium as the active metal but also, for example, the electrolyte, the container, the current collectors, the separators, and any tape and other components" (page 11 of principal brief, penultimate paragraph). However, we agree with the examiner that one of ordinary skill in the art would not have read Harrison and Boryta as narrowly as proposed by appellants but, rather, would have understood that the presence of sodium throughout the entirety of the cell would be problematic for the lithium electrodes. It stands to reason that if it was known that sodium is a harmful impurity for lithium electrodes, one would

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want to minimize its presence not only on the electrode but also in the electrode's environment.

Appellants rely upon the Declaration of Michael Pozin, one of the present inventors, as evidence that a lithium cell must be made according to a controlled process in order to limit its sodium content within the claimed range. The declarant states that "the sodium content of the lithium electrochemical cell components typically would result in a cell having a sodium content of greater than 1500 ppm" unless the components are specifically obtained to have a low sodium content (paragraphs 5 and 6 of Declaration). However, we agree with the examiner that the disclosures of Harrison and Boryta would have motivated one of ordinary skill in the art to treat the components of a lithium cell in order to ensure a minimum concentration of the deleterious sodium impurity. We note that the Declaration does not address the teachings of Harrison and Boryta.

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

AFFIRMED

Edward Kimlin

EDWARD C. KIMLIN)
Administrative Patent Judge)

Charles F. Warren

CHARLES F. WARREN)
Administrative Patent Judge)

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